

# Water Quality

## REPORT

Every day more than 100,000 citizens in Lynchburg and the surrounding communities can depend on clean, safe drinking water. The Lynchburg Department of Public Work's Utilities Division is proud to present you with specific information about your drinking water because it demonstrates how consistent hard work pays off. This report shows that your drinking water is even better than the federal and state standards for safety and purity. In fact, the City's water has always been in compliance with regulations.

The City of Lynchburg constantly monitors for constituents in your drinking water in accordance with federal and state regulations. The table in this report shows what constituents were detected for the period of January 1 to December 31, 2002.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. Environmental Protection Agency's (EPA's) Safe Drinking Water Hotline at 1-800-426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

A source water assessment of our system was conducted in 2002 by the Virginia Department of Health. The water sources were determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program.

The assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last five years. The report is available by contacting Leslie Gryder at 847-1322, ext. 126.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

### Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.



## Where does our water come from?

Lynchburg's primary water source is the 125-acre Pedlar Reservoir in Amherst County.

Water is also drawn from the James River. The City is fortunate to have two plentiful sources of good water.

As the water use increases in the future, we will have to pull more water from the James River. Reservoir water and river water are cleaned with the same treatment process, and both provide the same clean, clear water that we are so lucky to have.

## Who monitors the City's water quality?

The Virginia Department of Health and the EPA set the stringent regulations that the City uses to ensure that you receive safe drinking water. While the agencies do have a regulatory role, the City considers them partners in its efforts to deliver clean, safe drinking water to its customers. Lynchburg also provides water to its neighbors in surrounding counties. These city and county governments work together with the regulatory agencies to protect water quality in the area. This history of cooperation helps make Region 2000 attractive to businesses, which brings jobs to citizens and income to the localities to support government services.



## What does the City test for?

The City is required to test your water for numerous contaminants, which could come from a wide variety of sources. Refer to the next column for a complete list of all of the constituents for which the City tests. The table on the following page lists the results of the contaminants that were detected.

The City completed testing of unregulated contaminants in 2002. These are contaminants that the EPA is considering regulating in the future. Results of this monitoring are available by calling the City's Utilities Division at 847-1322.



### List of Constituents Tested

#### Microbiological contaminants:

Total coliform bacteria  
Fecal coliform bacteria  
Turbidity

#### Radioactive contaminants:

Beta/photon emitters  
Alpha emitters

#### Inorganic contaminants:

Antimony  
Arsenic  
Asbestos  
Barium  
Beryllium  
Cadmium  
Chromium  
Copper  
Cyanide  
Fluoride  
Lead  
Mercury (inorganic)  
Nitrate (as Nitrogen)  
Nitrite (as Nitrogen)  
Selenium  
Thallium

#### Synthetic organic contaminants including pesticides and herbicides:

2,4-D  
2,4,5-TP [Silvex]  
Acrylamide  
Alachlor  
Benzo (A) Pyrene [PAH]  
Carbofuran  
Chlordane  
Dalapon  
Di (2-ethylhexyl) adipate  
Di (2-ethylhexyl) phthalate  
Dibromochloropropane  
Dinoseb  
Diquat  
Dioxin [2,3,7,8-TCDD]

Endothall  
Endrin  
Epichlorohydrin  
Ethylene dibromide  
Glyphosate  
Heptachlor  
Heptachlor epoxide  
Hexachlorobenzene  
Hexachlorocyclopentadiene  
Lindane  
Methoxychlor  
Oxamyl [Vydate]  
PCBs [Polychlorinated Biphenyls]  
Pentachlorophenol  
Picloram  
Simazine  
Toxaphene

#### Volatile organic contaminants:

Benzene  
Carbon tetrachloride  
Chlorobenzene  
o-Dichlorobenzene  
p-Dichlorobenzene  
1,2-Dichlorobenzene  
1,1-Dichloroethylene  
cis-1,2-Dichloroethylene  
trans-1,2-Dichloroethylene  
Dichloromethane  
1,2-Dichloropropane  
Ethylbenzene  
HAA [Haloacetic Acids]  
MTBE [Methyl Tertiary Butyl Ether]  
Styrene  
Tetrachloroethylene  
1,2,4-Trichlorobenzene  
1,1,1-Trichloroethane  
1,1,2-Trichloroethane  
Trichloroethylene  
TTHMs [Total Trihalo-methanes]  
Toluene  
Vinyl Chloride  
Xylenes

# What were this year's test results?

As you can see from the table below, our system had no violations in 2002. We're proud that your drinking water meets or exceeds all federal and state requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water is completely safe at these levels.

Constituents/ Unit of Measure	Violation	Level Detected	AL	MCLG	MCL	MDRL	Likely Source of Contamination
<b>Inorganic Contaminants</b>							
Chlorine, ppm	No	0.095 (highest avg.) 0 - 2.1 (range)	—	—	—	4	water additive to control microbes
Copper*, ppm	No	0.059 (90th percentile) 0 above action level	1.3	1.3	—	—	corrosion of household plumbing systems, erosion of natural deposits
Fluoride, ppm	No	1.14 (highest avg.) 0 - 2.1 (range)	—	4	4	—	erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Lead*, ppb	No	2.3 (90th percentile) 0 above action level	15	0	—	—	corrosion of household plumbing systems, erosion of natural deposits
Nitrate + Nitrite (as Nitrogen), ppm	No	<0.05 - 0.05	—	10	10	—	runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
<b>Microbiological Contaminants</b>							
Fecal Coliform Bacteria	No	1.0	—	0	0	—	contamination of water storage tank in distribution system; valve on tank was shut as soon as source of contamination was determined; distribution system was flushed; repeat samples were negative for bacteria; tank was disinfected before being returned to service
Total Coliform Bacteria	No	2.3 %	—	0	<5.0	—	contamination of water storage tank in distribution system; valve on tank was shut as soon as source of contamination was determined; distribution system was flushed; repeat samples were negative for bacteria; tank was disinfected before being returned to service
Turbidity, NTU	No	0.40 (highest) 97 % < 0.3	—	n/a	TT	—	soil runoff
<b>Volatile Organic Contaminants</b>							
TTHM, ppb	No	81 (highest avg.) 13 - 191 (range)	—	0	80 (The MCL for TTHMs was 100 through 3rd Qtr. of 2002)	—	by-product of drinking water disinfection
HAA, ppb	No	40 (average) 14 - 49 (range)	—	0	60	—	by-product of drinking water disinfection
<b>Radioactive Contaminants</b>							
Alpha Emitters**, pCi/L	No	0.5 - 0.7	—	0	15	—	erosion of natural deposits
Beta/photon Emitters**, pCi/L	No	1.0 - 1.1	—	0	50	—	decay of natural and man-made deposits

\*Data from 2000, test is required every three years; \*\*Data from 2001, test is required every three years.

**NOTE:** Several terms used in this document may be unfamiliar to you. Many of them are units of measurement and are required language in this report. Refer to the following glossary for definition of terms.

**Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

**Constituents and Contaminants:** Any substances, whether naturally occurring otherwise, that are found in a public water source. All water, including bottled water, contains certain levels of contaminants; however, the water is not considered unhealthy unless the contaminants exist in concentrations that surpass certain levels. Sometimes additives are present as by-products of the purification process or introduced to promote public health (e.g., fluoride, chlorine).

**Maximum Contaminant Level (MCL):** The "Maximum Allowed" (MCL) is the highest level

of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**Maximum Contaminant Level Goal (MCLG):** The "goal" (MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**Maximum Disinfection Residual Level (MDRL):** The maximum level of disinfectant allowed in the water in the distribution system.

**Nephelometric Turbidity Unit (NTU):** Measure of the clarity of water. Turbidity in excess of five NTU is just noticeable to the average person.

**Non-Detects (ND):** Laboratory analysis indicates that the constituent is not present.

**Parts per million (ppm) or Milligrams per liter (mg/l):** Ratio that corresponds to one minute in two years or a single penny in \$10,000.

**Parts per billion (ppb) or Micrograms per liter:** Ratio that corresponds to one minute in 2,000 years or a single penny in \$10 million.

**Picocuries per liter (pCi/l):** Measure of radioactivity in water.

**Treatment Technique (TT):** A treatment technique is a required process intended to reduce the level of a contaminant in drinking water. No single sample can be greater than 1 NTU. At least 95% of the samples taken each month must be less than 0.3 NTU.





## How is our water treated?

The City has two water filtration and treatment plants: the College Hill Filtration Plant and the Abert Filtration Plant. Both plants underwent renovations in 1985 and have high-rate filtration capacity and computerized data control systems.

Lime is added to the water at the Pedlar Reservoir to raise the alkalinity. When the water reaches the treatment facility, alum is added to coagulate particles, fluoride is added to promote dental health, and chlorine is added for disinfection. After mixing, the water flows into basins where the particles clump together, become heavy, and settle to the bottom. Then the water goes through filters that remove particles, taste, and odor. The filters also remove chlorine. The water is finished by adjusting the pH and adding a rust inhibitor to protect pipes. As a final step, chlorine is added back into the water as required by health standards.

Lynchburg's water is distributed to more than 20,000 households through a network of 465 miles of pipes. Hourly quality control tests are performed by the City's chemist and water treatment plant operators to assure the treated water meets stringent standards. Staff is on duty at all times to ensure continuous water purity and to respond to emergencies such as water main breaks.

## Are some people more sensitive?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, and some elderly and infants, can be particularly at risk from infections. These people should seek advice about drinking water from their health care

providers. EPA/Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

## What causes water to be rust-colored?

Water can become discolored for several reasons. The most common reasons in Lynchburg are when a main water pipe breaks or when the Fire Department turns on fire hydrants to put out a fire, and when Utilities is conducting maintenance on the system. In all of these cases, a sudden surge of water or a sudden change in the normal direction of the water flow can cause sediment to get mixed into the water. This sediment is perfectly normal and comes from oxidation particles in the pipes. Discolored water can be used for household and sanitary purposes, but the City does not recommend drinking discolored water or using it for laundry because it can stain clothing. Once the pipes are back to normal, the discolored water is flushed through the system and is replaced by fresh water.



Hydrant flushing, which sometimes causes discolored water, is part of maintaining the City's fire protection system. Hydrant flushing is necessary to make sure the hydrants are in working order and water flow is adequate. Lynchburg has the highest rating in Central Virginia from the Insurance Services Office (ISO) for its ability to respond to fires.

## What if I have questions?

Call the City's Utilities Division at 847-1322 to report water or sewer problems 24 hours a day. You may contact Leslie Gryder at the same number if you would like further information about Lynchburg's water quality or related issues.

Also, take a look at the City's Web site for all sorts of information, including more information about your water quality. The Web site address is [www.lyncburgva.gov](http://www.lyncburgva.gov).

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